

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Steven J. Norris

Serial No.: 10/539,956

Filed: April 6, 2006

For: VMP-LIKE SEQUENCES OF
PATHOGENIC BORRELIA SPECIES
AND STRAINS

Group Art Unit: 1645

Examiner: Unknown

Atty. Dkt. No.: UTSJ:264US

Confirmation No.: 9208

CERTIFICATE OF ELECTRONIC SUBMISSION

DATE OF SUBMISSION: November 7, 2006

INFORMATION DISCLOSURE STATEMENT

MS AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

In compliance with the duty of disclosure under 37 C.F.R. § 1.56, it is respectfully requested that this Information Disclosure Statement be entered and the documents listed on attached Form PTO-1449 be considered by the Examiner and made of record. Copies of the listed documents required by 37 C.F.R. § 1.98(a)(2) are enclosed for the convenience of the Examiner.

In accordance with 37 C.F.R. § 1.97(g), (h), this Information Disclosure Statement is not to be construed as a representation that a search has been made, and is not to be construed to be

an admission that the information cited is, or is considered to be, material to patentability as defined in 37 C.F.R. § 1.56(b).

The present Information Disclosure Statement is being filed prior to the receipt of a first Official Action reflecting an examination on the merits, and hence is believed to be timely filed in accordance with 37 C.F.R. § 1.97(b). No fees are believed to be due in connection with the filing of this Information Disclosure Statement, however, should any fees under 37 C.F.R. § 1.16 to 1.21 be deemed necessary for any reason relating to these materials, the Commissioner is authorized to deduct the appropriate fees from Fulbright & Jaworski Deposit Account No.: 50-1212/UTSH:264US.

Applicant respectfully requests that the listed documents be made of record in the present case.

Respectfully submitted,



Travis Wohlers
Reg. No. 57,423
Attorney for Applicant

FULBRIGHT & JAWORSKI L.L.P.
600 Congress Avenue, Suite 2400
Austin, Texas 78701
(512) 474-5201

Date: November 7, 2006

Form PTO-1449 (modified)		Atty. Docket No. UTSH:264US	Serial No. 10/539,956
List of Patents and Publications for Applicant's		Applicant Steven J. Norris	
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U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date of App.
	A1	4,554,101	11/19/85	Hopp	530	324	01/28/83
	A2	4,578,770	03/25/86	Mitani	250	559.2	06/10/83
	A3	4,596,792	06/24/86	Vyas	514	21	03/30/84
	A4	4,599,230	07/08/86	Millich, <i>et al.</i>	424	189.1	03/09/84
	A5	4,599,231	07/08/86	Millich, <i>et al.</i>	424	189.1	03/09/84
	A6	4,601,903	07/22/86	Frasch	424	250.1	05/1/85
	A7	4,608,251	08/26/86	Mia	424	185.1	11/09/84
	A8	4,801,540	01/31/89	Hiatt <i>et al.</i>	435	411	01/02/87
	A9	5,155,022	10/13/92	Naqui <i>et al.</i>	435	7.32	02/08/91
	A10	5,178,859	11/12/93	Simon <i>et al.</i>	435	139.1	09/19/90
	A11	5,187,065	02/16/93	Schutzer	435	7.32	12/22/89
	A12	5,217,872	06/08/93	Dorward <i>et al.</i>	435	7.32	02/27/90
	A13	5,217,874	06/08/93	Guadagno <i>et al.</i>	435	28	05/09/91
	A14	5,246,844	09/21/93	Norris <i>et al.</i>	435	480	10/22/91
	A15	5,279,938	01/18/94	Rosa	435	6	05/18/92
	A16	5,283,175	02/01/94	Weaver <i>et al.</i>	435	6	04/15/91
	A17	5,304,718	04/19/94	Ward <i>et al.</i>	800	266	02/03/92
	A18	5,324,630	06/28/94	LeFebvre <i>et al.</i>	435	6	06/28/91
	A19	5,385,826	01/31/95	Schell <i>et al.</i>	435	7.32	08/09/93
	A20	5,434,077	07/18/95	Simon <i>et al.</i>	435	243	05/27/93
	A21	5,436,000	07/25/95	Barbour <i>et al.</i>	424	93.2	01/11/91
	A22	5,571,718	11/05/96	Dunn <i>et al.</i>	435	252.3	09/08/92
	A23	6,437,116	08/20/02	Norris <i>et al.</i>	536	23.7	02/20/97

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	A24	6,475,492	11/05/02	Philipp <i>et al.</i>	424	234.1	04/28/99
	A25	6,610,301	08/26/03	Motz <i>et al.</i>	424	190.1	08/01/97
	A26	6,660,274	12/09/03	Philipp	424	234.1	06/29/98

Foreign Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Country	Language
	B1	WO 00/65064	11/02/00	WIPO	English
	B2	WO 91/13630	09/19/91	WIPO	English
	B3	WO 97/31123	08/28/97	WIPO	English
	B4	WO 99/00413	01/07/99	WIPO	English

Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
	C1	Balmelli and Piffatetti, "Analysis of the genetic polymorphism of <i>Borrelia burgdorferi</i> sensu lato by multilocus enzyme electrophoresis," <i>Int. J. Syst. Bacteriol.</i> , 46:167-172, 1996.
	C2	Barbour and Garon, "Linear plasmids of the bacterium <i>Borrelia burgdorferi</i> have covalently closed ends," <i>Science</i> , 237:409-411, 1987.
	C3	Barbour <i>et al.</i> , "Structural analysis of the variable major proteins of <i>Borrelia hermsii</i> ," <i>J. Exp. Med.</i> , 158:2127-2140, 1983.
	C4	Barbour <i>et al.</i> , "Tandem insertion sequence-like elements define the expression site for variable antigen genes of <i>Borrelia hermsii</i> ," <i>Infect. Immun.</i> , 59:390-397, 1991.
	C5	Barbour <i>et al.</i> , "Variable antigen genes of the relapsing fever agent <i>Borrelia hermsii</i> are activated by promoter addition," <i>Mol. Microbiol.</i> , 5:489-493, 1991.
	C6	Barbour <i>et al.</i> , "Variable major proteins of <i>Borrelia hermsii</i> ," <i>J. Exp. Med.</i> , 156:1312-1324, 1982.

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	C7	Barbour, "Immunochemical analysis of Lyme disease spirochetes," <i>Yale J. Biomed.</i> , 57:581-586, 1984.
	C8	Barbour, "Plasmid analysis of <i>Borrelia burgdorferi</i> , the Lyme disease agent," <i>J. Clin. Microbiol.</i> , 26(3):475-478, 1988.
	C9	Barstad <i>et al.</i> , "Variable major proteins of <i>Borrelia hermsii</i> . Epitope mapping and partial sequence analysis of CNBr peptides," <i>J. Exp. Med.</i> , 161:1302-1314, 1985.
	C10	Barthold <i>et al.</i> , "Susceptibility of laboratory rats to isolates of <i>Borrelia burgdorferi</i> from different geographic areas," <i>Am. J. Trop. Med. Hyg.</i> , 42:596-600, 1990.
	C11	Barthold, "Antigenic stability of <i>Borrelia burgdorferi</i> during chronic infections of immunocompetent mice," <i>Infect. Immun.</i> , 61:4955-4961, 1993.
	C12	Benach <i>et al.</i> , "A murine IgM monoclonal antibody binds an antigenic determinant in outer surface protein A, an immunodominant basic protein of the Lyme disease spirochete," <i>The Journal of Immunology</i> , 140:265-272, 1988.
	C13	Brandt <i>et al.</i> , "Immunogenic integral membrane proteins of <i>Borrelia burgdorferi</i> are lipoproteins," <i>Infect. Immun.</i> , 58(4):983-991, 1990.
	C14	Burgdorfer <i>et al.</i> , "Lyme disease, a tick-borne spirochetosis?," <i>Science</i> , 216:1317-1319, 1982.
	C15	Burman <i>et al.</i> , "The variable antigens Vmp7 and Vmp21 of the relapsing fever bacterium <i>Borrelia hermsii</i> are structurally analogous to the VSG proteins of the African trypanosome," <i>Molecular Microbiology</i> , 4(10):1715-1726, 1990.
	C16	Cadavid <i>et al.</i> , "Variability of a bacterial surface protein and disease expression in a possible mouse model of systemic Lyme borreliosis," <i>J Exp Med</i> , 179(2):631-42, 1994.
	C17	Carroll and Gheradini, "Membrane protein variations associated with <i>in vitro</i> passage of <i>Borrelia burgdorferi</i> ," <i>Infect. Immun.</i> , 64:392-398, 1996.
	C18	Carter <i>et al.</i> , "A family of surface-exposed proteins of 20 kilodaltons in the genus <i>Borrelia</i> ," <i>Infect. Immun.</i> , 62:2792-2799, 1994.
	C19	Cusjens <i>et al.</i> , "Linear chromosomes of Lyme disease agent spirochetes: genetic diversity and conservation of gene order," <i>J. Bacteriol.</i> , 177:2769-2780, 1995.
	C20	Cluss and Boothby, "Thermoregulation of protein synthesis in <i>Borrelia burgdorferi</i> ," <i>Infect. Immun.</i> , 58(4):1038-1042, 1990.

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	C21	Dever <i>et al.</i> , "In vitro antimicrobial susceptibility testing of <i>Borrelia burgdorferi</i> : a microdilution MIC method and time-kill studies," <i>J. Clin. Microbiol.</i> , 30:2692-2697, 1992.
	C22	Donelson, "Mechanisms of antigenic variation in <i>Borrelia hermsii</i> and African trypanosomes," <i>J. Biol. Chem.</i> , 270:7783-7786, 1995.
	C23	Fawcett <i>et al.</i> , "Detection of antibodies to the recombinant p39 protein of <i>Borrelia burgdorferi</i> using enzyme immunoassay and immunoblotting," <i>J. Rheumatology</i> , 20(4):734-738, 1993.
	C24	Fuchs <i>et al.</i> , "Molecular analysis and expression of a <i>Borrelia burgdorferi</i> gene encoding a 22kDa protein (pC) in <i>E. coli</i> ," <i>Mol. Microbiol.</i> , 6:503-509, 1992.
	C25	GenBank Accession Number AAB09432
	C26	GenBank Accession Number AAB17737
	C27	GenBank Accession Number AAC45733
	C28	Grodzicki and Steere, "Comparison of immunoblotting and indirect enzyme-linked immunosorbent assay using different antigen preparations for diagnosing early lyme disease," <i>J. Infect. Dis.</i> , 157(4):790-797, 1988.
	C29	Hagblom <i>et al.</i> , "Intragenic recombination leads to pilus antigenic variation in <i>Neisseria gonorrhoeae</i> ," <i>Nature</i> , 315:156-158, 1985.
	C30	Howe <i>et al.</i> , "A single recombinant plasmid expressing two major outer surface proteins of the lyme disease spirochete," <i>Science</i> , 227:645-646, 1985.
	C31	Howe <i>et al.</i> , "Organization of genes encoding two outer membrane proteins of the lyme disease agent <i>Borrelia burgdorferi</i> within a single transcriptional unit," <i>Infect. Immun.</i> , 54:207-212, 1986.
	C32	Hudson <i>et al.</i> , "Increased expression of <i>Borrelia burgdorferi</i> <i>visE</i> in response to human endothelial cell membrane," <i>Mol. Microbiol.</i> , 41:229-239, 2001.
	C33	Hughes and Johnson, "Methylated DNA in <i>Borrelia</i> species," <i>J. Bacteriol.</i> , 172:6602-6604, 1990.
	C34	Hyde <i>et al.</i> , "Detection of antigens in urine of mice and humans infected with <i>Borrelia burgdorferi</i> , etiologic agent of lyme disease," <i>Journal of Clinical Microbiology</i> , 27(1):58-61, 1989.

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	C35	Indest <i>et al.</i> "Analysis of <i>Borrelia burgdorferi</i> <i>vlxE</i> gene expression and recombination in the tick vector," <i>Infect. Immun.</i> , 69:7083-7090, 2001.
	C36	Jiang <i>et al.</i> , "Cross-antigenicity between the major surface proteins (<i>ospA</i> and <i>ospB</i>) and other proteins of <i>Borrelia burgdorferi</i> ," <i>J. Immun.</i> , 144(1):284-289, 1990.
	C37	Johnson <i>et al.</i> , "Infection of Syrian hamsters with lyme disease spirochetes," <i>J. Clin. Microbiol.</i> , 20:1099-1101, 1984.
	C38	Karlsson, "Western immunoblot and flagellum enzyme-linked immunosorbent assay for serodiagnosis of lyme borreliosis," <i>J. Clin. Microbiol.</i> , 28(9):2148-2150, 1990.
	C39	Kawabata <i>et al.</i> , "Genetic and immunological analyses of Vls (VMP-like sequences) of <i>Borrelia burgdorferi</i> ," <i>Microbial Pathogenesis</i> , 24:155-165, 1998.
	C40	Kitten and Barbour, "Juxtaposition of expressed variable antigen genes with a conserved telomere in the bacterium <i>Borrelia hermsii</i> ," <i>Proc. Natl. Acad. Sci. USA</i> , 87:6077-6081, 1990.
	C41	Kitten and Barbour, "The relapsing fever agent <i>Borrelia hermsii</i> has multiple copies of its chromosome and linear plasmids," <i>Genetics</i> , 132:311-324, 1992.
	C42	Kitten <i>et al.</i> , "Intragenic recombination and a chimeric outer membrane protein in the relapsing fever agent <i>Borrelia hermsii</i> ," <i>J. Bacteriol.</i> , 175(9):2516-2522, 1993.
	C43	Koomey <i>et al.</i> , "Effects of <i>recA</i> mutations on pilus antigenic variation and phase transitions in <i>Neisseria gonorrhoeae</i> ," <i>Genetics</i> , 117:391-398, 1987.
	C44	Kupsch <i>et al.</i> , "Variable opacity (<i>Opa</i>) outer membrane proteins account for the cell tropisms displayed by <i>Neisseria gonorrhoeae</i> for human leukocytes and epithelial cells," <i>EMBO. J.</i> , 12:641-650, 1993.
	C45	Lambden <i>et al.</i> , "Biological properties of two distinct pilus types produced by isogenic variants of <i>Neisseria gonorrhoeae</i> P9," <i>J. Bacteriol.</i> , 141:393-396, 1980.
	C46	LeFebvre <i>et al.</i> , "Characterization of <i>Borrelia burgdorferi</i> isolates by restriction endonuclease analysis and DNA hybridization," <i>Journal of Clinical Microbiology</i> , 27(4):636-639, 1989.
	C47	Liang and Philipp, "Analysis of antibody response to invariable regions of <i>VlsE</i> , the variable surface antigen of <i>Borrelia burgdorferi</i> ," <i>Infect. Immun.</i> , 67:6702-6706, 1999.

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	C48	Liang <i>et al.</i> , "Antigenic conservation of an immunodominant invariable region of the LvsE lipoprotein among European pathogenic genospecies of <i>Borrelia burgdorferi</i> SL," <i>J. Infect. Dis.</i> , 182:1455-1462, 2000.
	C49	Liang <i>et al.</i> , "An immunodominant conserved region within the variable domain of VlsE, the variable surface antigen of <i>Borrelia burgdorferi</i> ," <i>J. Immunol.</i> , 163:5566-5573, 1999.
	C50	Liang <i>et al.</i> , "Characterization of a <i>Borrelia burgdorferi</i> VlsE invariable region useful in canine lyme disease serodiagnosis by enzyme-linked immunosorbent assay," <i>J. Clinical Microbiology</i> , 38(11):4160-4166, 2000
	C51	Liang <i>et al.</i> , "Sensitive and specific serodiagnosis of lyme disease by enzyme-linked immunosorbent assay with a peptide based on an immunodominant conserved region of <i>Borrelia burgdorferi</i> VlsE," <i>J. Clinical Microbiology</i> , 37(12):3990-3996, 1999
	C52	Livey <i>et al.</i> , "Evidence for lateral transfer and recombination in PspC variation in Lyme disease <i>Borrelia</i> ," <i>Mol. Microbiol.</i> , 18:257-269, 1995.
	C53	Luft <i>et al.</i> , "Biochemical and immunological characterization of the surface proteins of <i>Borrelia burgdorferi</i> ," <i>Infect. Immun.</i> , 57(11):3637-3645, 1989.
	C54	Marconi <i>et al.</i> , "Analysis of the distribution and molecular heterogeneity of the ospD gene among the Lyme disease spirochetes: evidence for lateral gene exchange," <i>J. Bacteriol.</i> , 176:4572-4582, 1994.
	C55	Marconi, <i>et al.</i> , "Variability of osp genes and gene products among species of Lyme disease spirochetes," <i>Infect. Immun.</i> , 61:2611-2617, 1993.
	C56	Margolis <i>et al.</i> , "Homology between <i>Borrelia burgdorferi</i> OspC and members of the family of <i>Borrelia hermsii</i> variable major proteins," <i>Gene</i> , 143:105-110, 1994.
	C57	Moody <i>et al.</i> , "Lyme borreliosis in laboratory animals: effect of host species and <i>in vitro</i> passage of <i>Borrelia burgdorferi</i> ," <i>Am. J. Trop. Med. Hyg.</i> , 43(1):87-92, 1990.
	C58	Norris <i>et al.</i> , "High- and low-infectivity phenotypes of clonal populations of <i>in vitro</i> -cultured <i>Borrelia burgdorferi</i> ," <i>Infect. Immun.</i> , 63:2206-2212, 1995.
	C59	Norris <i>et al.</i> , "Low-passage-associated proteins of <i>Borrelia burgdorferi</i> B31: characterization and molecular cloning of OspD, a surface-exposed, plasmid-encoded lipoprotein," <i>Infect. Immun.</i> , 60:4662-4672, 1992.

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	C60	Pennington <i>et al.</i> , "Arthritis severity and spirochete burden are determined by serotype in the <i>Borrelia turicatae</i> -mouse model of Lyme disease," <i>Infect Immunology</i> , 65(1):285-92, 1997.
	C61	Persing <i>et al.</i> , "Genetic stability of <i>Borrelia burgdorferi</i> recovered from chronically infected immunocompetent mice," <i>Infect. Immun.</i> , 62:3521-3527, 1994.
	C62	Plasterk <i>et al.</i> , "Transposition of structural genes to an expression sequence on a linear plasmid causes antigenic variation in the bacterium <i>Borrelia hermslii</i> ," <i>Nature</i> , 318:257-263, 1985.
	C63	Purser and Norris, "Correlation between plasmid content and infectivity in <i>Borrelia burgdorferi</i> ," <i>Proc. Natl. Acad. Sci. USA</i> , 97:13865-13870, 2000.
	C64	Restrepo and Barbour, "Antigen diversity in the bacterium <i>B. hermslii</i> through 'somatic' mutations in rearranged <i>vmp</i> genes," <i>Cell</i> , 78:867-876, 1994.
	C65	Restrepo <i>et al.</i> , "Activation of a <i>vmp</i> pseudogene in <i>Borrelia hermslii</i> : an alternate mechanism of antigenic variation during relapsing fever," <i>Mol. Microbiol.</i> , 13:287-299, 1994.
	C66	Restrepo <i>et al.</i> , "Subtelomeric expression regions of <i>Borrelia hermslii</i> linear plasmids are highly polymorphic," <i>Mol. Microbiol.</i> , 6:3299-3311, 1992.
	C67	Rosa <i>et al.</i> , "Directed insertion of a selectable marker into a circular plasmid of <i>Borrelia burgdorferi</i> ," <i>J. Bacteriol.</i> , 178:5946-5953, 1996.
	C68	Rosa <i>et al.</i> , "Recombination between genes encoding major surface proteins A and B of <i>Borrelia burgdorferi</i> ," <i>Mol. Microbiol.</i> , 6:3031-3040, 1992.
	C69	Sadziene <i>et al.</i> , "Antibody-resistant mutations of <i>Borrelia burgdorferi</i> : <i>in vitro</i> selection and characterization," <i>J. Exp. Med.</i> , 176:799-809, 1992.
	C70	Sadziene <i>et al.</i> , " <i>Borrelia burgdorferi</i> mutant lacking osp: biological and immunological characterization," <i>Infection and Immunity</i> , 63(4):1573-1580, 1995.
	C71	Samuels, <i>et al.</i> , "Genetic transformation of the Lyme disease agent <i>Borrelia burgdorferi</i> with coumarin-resistant <i>gyrB</i> ," <i>J. Bacteriol.</i> , 176:6045-6049, 1994.
	C72	Schwan and Simpson, "Factors influencing the antigenic reactivity of <i>Borrelia burgdorferi</i> the Lyme disease spirochete," <i>Scand. J. Infect. Dis.</i> , 77:94-101, 1991.
	C73	Schwan <i>et al.</i> , "Changes in antigenic reactivity of <i>Borrelia burgdorferi</i> the Lyme disease spirochete, during persistent infection in mice," <i>Can. J. Microbiol.</i> , 37:450-454, 1991.

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Form PTO-1449 (modified)		Atty. Docket No. UTSH:264US	Serial No. 10/539,956
List of Patents and Publications for Applicant's INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant Steven J. Norris	
		Filing Date: April 6, 2006	Group: 1645
U.S. Patent Documents See Page 1-2	Foreign Patent Documents See Page 2	Other Art See Page 2-9	

Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
	C74	Schwan <i>et al.</i> , "Changes in infectivity and plasmid profile of the Lyme disease spirochete, <i>Borrelia burgdorferi</i> , as a result of <i>in vitro</i> cultivation," <i>Infect. Immun.</i> , 56:1831-1836, 1988.
	C75	Scriba <i>et al.</i> , "The 39-kilodalton protein of <i>Borrelia burgdorferi</i> : a target for bactericidal human monoclonal antibodies," <i>Infect. Immun.</i> , 61(10):4523-4526, 1993.
	C76	Segal <i>et al.</i> , "Antigenic variation of gonococcal pilus involves assembly of separated silent gene segments," <i>Proc. Natl. Acad. Sci. USA</i> , 83:2177-2181, 1986.
	C77	Seifert and So, "Genetic mechanisms of bacterial antigenic variation," <i>Microbiol. Rev.</i> , 52:327-336, 1988.
	C78	Simpson <i>et al.</i> , "Reactivity of human Lyme borreliosis sera with a 39-kilodalton antigen specific to <i>Borrelia burgdorferi</i> ," <i>J. Clin. Microbiol.</i> , 28(6):1329-1337, 1990.
	C79	Simpson <i>et al.</i> , "Antibody to a 39-kilodalton <i>Borrelia burgdorferi</i> antigen (P39) as a marker for infection in experimentally and naturally inoculated animals," <i>J. Clinical Microb.</i> , 29(2):236-243, 1991.
	C80	Stevenson <i>et al.</i> , "Expression and gene sequence of outer surface protein C of <i>Borrelia burgdorferi</i> reisolated from chronically infected mice," <i>Infect. Immun.</i> , 62:3568-3571, 1994.
	C81	Stoener <i>et al.</i> , "Antigenic variation of <i>Borrelia hermsii</i> ," <i>J. Exp. Med.</i> , 156:1297-1311, 1982.
	C82	Szczepanski and Benach, "Lyme borreliosis: host responses to <i>Borrelia burgdorferi</i> ," <i>Microb. Rev.</i> , 55(1):21-34, 1991.
	C83	Thielsen <i>et al.</i> , "Evolution of the <i>Borrelia burgdorferi</i> outer surface protein OspC," <i>J. Bacteriol.</i> , 177:3036-3044, 1995.
	C84	Walker <i>et al.</i> , "Physical map of the genome of <i>Treponema pallidum</i> subsp. <i>pallidum</i> (Nichols)," <i>J. Bacteriol.</i> , 177:1797-1804, 1995.
	C85	Wallich <i>et al.</i> , "The <i>Borrelia burgdorferi</i> flagellum-associated 41-kilodalton antigen (flagellin): molecular cloning, expression and amplification of the gene," <i>Infect. Immun.</i> , 58(6):1711-1719, 1990.
	C86	Wang <i>et al.</i> , "Analysis of a VMP-like sequence (vls) locus in <i>Borrelia garinii</i> and Vls homologues among four <i>Borrelia burgdorferi</i> sensu lato species," <i>FEMS Microbiol. Lett.</i> , 199:39-45, 2001.

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Exam. Init.	Ref. Des.	Citation
	C87	Wang <i>et al.</i> , "Characterization of the <i>vls</i> antigenic variation loci of the Lyme disease spirochaetes <i>Borrelia garinii</i> Ip90 and <i>Borrelia afzelii</i> ACA1," <i>Molecular Microbiology</i> , 47(5):1407-17, 2003.
	C88	Wang, et al., "Characteristics of the <i>vls</i> Locus of <i>Borrelia garinii</i> Ip90," Abstracts of the General Meeting of the American Society for Microbiology 100 th General Meeting, 100:275, 2000.
	C89	Wilske <i>et al.</i> , "Antigenic variation and strain heterogeneity in <i>Borrelia</i> spp.," <i>Res. Microbiol.</i> , 143:583-596, 1992.
	C90	Wise and Weaver, "Detection of the Lyme disease bacterium, <i>Borrelia burgdorferi</i> , by using the polymerase chain reaction and a nonradioisotopic gene probe," <i>Journal of Clinical Microbiology</i> , 29(7):1523-1526, 1991.
	C91	Wu and Tokunaga, "Biogenesis of lipoproteins in bacteria," <i>Curr. Top. Microbiol. Immunol.</i> , 125:127-157, 1986.
	C92	Xu and Johnson, "Analysis and comparison of plasmid profile of <i>Borrelia burgdorferi</i> sensu lato strains," <i>J. Clin. Microbiol.</i> , 33:2679-2685, 1995.
	C93	Xu <i>et al.</i> , "Correlation of plasmids with infectivity of <i>Borrelia burgdorferi</i> sensu stricto type strain B31," <i>Infect. Immun.</i> , 64:3870-3876, 1996.
	C94	Zhang and Norris, "Genetic variation of the <i>Borrelia burgdorferi</i> gene <i>vlsE</i> involves cassette-specific, segmental gene conversion," <i>Infect. Immun.</i> , 66:3698-3704, 1998.
	C95	Zhang and Norris, "Kinetics and in vitro induction of genetic variation of <i>vlsE</i> in <i>Borrelia burgdorferi</i> ," <i>Infect. Immun.</i> , 66:3689-3697, 1998.
	C96	Zhang <i>et al.</i> , "Antigenic variation in Lyme disease borreliae by promiscuous recombination of VMP-like sequence cassettes," <i>Cell</i> , 89:275-285, 1997.

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